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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,092	07/05/2001	Yonglin Huang	NFCS-00-020	4453

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[REDACTED] EXAMINER

CURTIS, CRAIG

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2872

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. <b>09/900,092</b>	Applicant(s) <b>HUANG et al.</b>
	Examiner <b>Craig Curtis</b>	Art Unit <b>2872</b>
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>		
<b>Period for Reply</b> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.		
<ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>		
<b>Status</b> <p>1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>Dec 17, 2002</u></p> <p>2a) <input type="checkbox"/> This action is FINAL.      2b) <input checked="" type="checkbox"/> This action is non-final.</p> <p>3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i>, 1935 C.D. 11; 453 O.G. 213.</p>		
<b>Disposition of Claims</b> <p>4) <input checked="" type="checkbox"/> Claim(s) <u>1-20</u> is/are pending in the application.</p> <p>4a) Of the above, claim(s) _____ is/are withdrawn from consideration.</p> <p>5) <input type="checkbox"/> Claim(s) _____ is/are allowed.</p> <p>6) <input checked="" type="checkbox"/> Claim(s) <u>1-20</u> is/are rejected.</p> <p>7) <input type="checkbox"/> Claim(s) _____ is/are objected to.</p> <p>8) <input type="checkbox"/> Claims _____ are subject to restriction and/or election requirement.</p>		
<b>Application Papers</b> <p>9) <input type="checkbox"/> The specification is objected to by the Examiner.</p> <p>10) <input type="checkbox"/> The drawing(s) filed on _____ is/are a) <input type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).</p> <p>11) <input type="checkbox"/> The proposed drawing correction filed on _____ is: a) <input type="checkbox"/> approved b) <input type="checkbox"/> disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.</p> <p>12) <input type="checkbox"/> The oath or declaration is objected to by the Examiner.</p>		
<b>Priority under 35 U.S.C. §§ 119 and 120</b> <p>13) <input type="checkbox"/> Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).</p> <p>a) <input type="checkbox"/> All b) <input type="checkbox"/> Some* c) <input type="checkbox"/> None of:  1. <input type="checkbox"/> Certified copies of the priority documents have been received.  2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____.  3. <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</p> <p>*See the attached detailed Office action for a list of the certified copies not received.</p>		
<p>14) <input type="checkbox"/> Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e). a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.</p> <p>15) <input type="checkbox"/> Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.</p>		
<b>Attachment(s)</b> <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____</p> <p>4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____</p>		

Art Unit: 2872

## DETAILED ACTION

### *Disposition of the Instant Application*

- This Office action is responsive to Applicants' Amendment A filed on 17 December 2003, which has been made of record in the file as Paper No. 9.
- By this amendment, Applicants have amended claims 2, 4, 5, 9, and 11-14. Claims 1-20 currently are pending in the instant application.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- I. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (5,566,259) in view of Shin et al. (JP 11-174382).

Pan et al. disclose the invention as claimed--a dual-stage optical isolator comprising:

a first stage disposed (Fig. 3A, e.g.) along an optical path; and

a second stage (Fig. 3C, e.g.) disposed along said optical path (see Fig. 1), wherein said first stage comprises:

a first birefringent wedge having an optic axis and a first wedge angle ( $\angle 2A$ );

Art Unit: 2872

a second birefringent wedge and a second wedge angle (14A); and  
a first Faraday rotator (13A) disposed between said first and second wedges;  
wherein said first and second wedge angles are substantially equal (see Figs.);  
wherein said first Faraday rotator is configured to rotate the polarization of applied light  
by 45<sup>0</sup> (see Fig. 3A);  
a third birefringent wedge having an optic axis 90<sup>0</sup> apart from the second birefringent  
wedge and a third wedge angle (cf. 12A & 12B);  
a fourth birefringent wedge having an optic axis 45<sup>0</sup> apart from the third birefringent  
wedge and a fourth wedge angle (see 14B); and  
a second Faraday rotator disposed between said third and fourth wedges for rotating a  
polarization plane by 45<sup>0</sup> (see 13B);  
wherein said first ray is the e-ray with respect to said first stage and is the o-ray with  
respect to said second stage, and said second ray is the o-ray with respect to said first stage and  
is the e-ray with respect to said second stage (see Figs. 2A, 2B);  
wherein said e- and o- rays exit from said second stage having orthogonal polarizations  
and separated by a walk-off distance, thereby forming a plane (Id.)--EXCEPT FOR an explicit  
teaching wherein said second stage is rotated 90<sup>0</sup> with respect to said first stage. Shin et al.,  
however, provide a teaching of a dual-stage optical isolator (See Fig. 1) having a first stage (1) and

Art Unit: 2872

a second stage (2), said second stage being disposed along said optical path and rotated 90° with respect to said first stage.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the dual-stage optical isolator taught by Pan et al. such that its second stage be rotated 90° with respect to said first stage, as explicitly taught by Shin et al., for at least the purpose of minimizing polarized wave dispersion and otherwise guiding polarized beams through said dual-stage optical isolator in a desired manner.

*Response to Arguments*

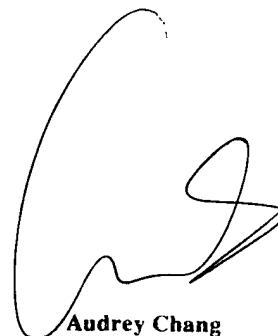
2. Applicants' arguments filed 17 December 2002 have been fully considered but are moot in light of the new grounds of rejection set forth hereinbefore.

Art Unit: 2872

### *Contact Information*

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding to status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



**Audrey Chang  
Primary Examiner  
Technology Center 2800**

*Craig H. Curtis*  
Craig H. Curtis  
Group Art Unit 2872  
20 March 2003